Amendments to the Claims

Claims 1 to 10 (Cancelled)

11. (Currently amended) A radio receiver for processing audio information and discriminating distortions within the processed signals, comprising:

analog to digital converter circuitry;

demodulator circuitry coupled to receive digital signals from the analog to digital converter circuitry and having demodulated digital signals as outputs; and

distortion discrimination circuitry coupled to the demodulated digital signals and having at least one distortion indication signal as an output, the distortion indication signal indicating when a distortion event has been detected; and

wherein the distortion discrimination circuitry comprises impulse noise distortion discrimination circuitry and the distortion indication signal comprises an impulse noise distortion indication signal; and

~~The radio receiver of claim 10,~~ wherein the impulse noise discrimination circuitry monitors a digital magnitude signal and a digital multiplexed signal from the demodulator to determine the existence of an impulse noise event.

12. (Original) The radio receiver of claim 11, wherein the demodulator is a CORDIC demodulator.

13. (Original) The radio receiver of claim 11, wherein the impulse noise discrimination circuitry comprises:

a first threshold detection circuit coupled to receive the digital magnitude signal from the demodulator and having an output signal that is asserted when a threshold is exceeded; and

a second threshold detection circuit coupled to receive the digital multiplexed signal from the demodulator and having an output signal that is asserted when a threshold is exceeded; and

wherein a distortion event signal is asserted when both the output signals from the first and second threshold detection circuits are simultaneously asserted.

14. (Original) The radio receiver of claim 13, wherein the first and second threshold detection circuits each comprise a high-pass filter and a threshold comparator.

15. (Original) The radio receiver of claim 14, wherein the high-pass filters have cut-off frequencies at about 100 kHz.

16. (Original) The radio receiver of claim 13, further comprising smoothing circuitry coupled to receive the distortion event signal and to produce an impulse output signal to act as the impulse noise distortion indication signal.

Claim 17 (Cancelled).

18. (Currently amended) A radio receiver for processing audio information and discriminating distortions within the processed signals, comprising:

analog to digital converter circuitry;

demodulator circuitry coupled to receive digital signals from the analog to digital converter circuitry and having demodulated digital signals as outputs;

distortion discrimination circuitry coupled to the demodulated digital signals and having at least one distortion indication signal as an output, the distortion indication signal indicating when a distortion event has been detected; and

a stereo decoder coupled to receive the impulse noise distortion indication signal, wherein the stereo decoder is responsive to the impulse noise distortion indication signal to modify the audio output signals to diminish impulse noise distortion effects in the decoded audio output signals; and

~~The radio receiver of claim 17,~~ wherein the stereo decoder modifies the audio output signals by performing a blank and hold procedure.

Claim 19 (Cancelled).

20. (Currently amended) A radio receiver for processing audio information and discriminating distortions within the processed signals, comprising:

analog to digital converter circuitry;

demodulator circuitry coupled to receive digital signals from the analog to digital converter circuitry and having demodulated digital signals as outputs; and

distortion discrimination circuitry coupled to the demodulated digital signals and having at least one distortion indication signal as an output, the distortion indication signal indicating when a distortion event has been detected; and

wherein the distortion discrimination circuitry comprises multipath distortion discrimination circuitry and the distortion indication signal comprises a multipath distortion indication signal; and

~~The radio receiver of claim 19,~~ wherein the multipath discrimination circuitry monitors a magnitude signal from the demodulator to determine the existence of an impulse noise event.

21. (Original) The radio receiver of claim 20, wherein the demodulator is a CORDIC demodulator.

22. (Original) The radio receiver of claim 20, wherein the multipath discrimination circuitry comprises:

a first low-pass filter having a first time constant and being coupled to receive the digital magnitude signal from the demodulator;

a second low-pass filter having a second time constant and being coupled to receive the digital magnitude signal from the demodulator, the second time constant being longer than the first time constant; and

compare circuitry coupled to receive output signals from the first and second low-pass filters and having the multipath distortion indication signal as an output, the multipath distortion indication signal being asserted if the output signals from the first and second low-pass filters differ in signal strength by more than a selected amount.

23. (Currently amended) The ~~automobile~~ radio receiver of claim ~~19~~ 20, further comprising a stereo decoder coupled to receive the multipath distortion indication signal, wherein the stereo decoder is responsive to the multipath distortion indication signal to modify the audio output signals to diminish distortion effects in the decoded audio output signals.

24. (Original) The radio receiver of claim 23, wherein the stereo decoder modifies the audio output signals by performing a blank and hold procedure.

Claims 25 to 26 (Cancelled).

27. (Currently amended) A method for discriminating distortion events within digital receivers, comprising:

converting analog audio information to digital audio signal information;

demodulating the digital audio signal information;

discriminating distortions within the demodulated digital signals by monitoring the demodulated digital signals; and

generating at least one distortion indication signal a distortion event has been detected within the demodulated digital signals; and

wherein the discriminating distortions step comprises discriminating impulse noise distortion events and wherein the generating step comprises generating an impulse noise distortion indication signal; and

~~The method of claim 26,~~ wherein the discriminating step comprises monitoring a digital magnitude signal and a digital multiplexed signal from the demodulator.

28. (Currently amended) The method of claim 27, wherein the discriminating step further comprises:

asserting a first output signal if the digital magnitude signal from the demodulator exceeds a first threshold level;

asserting a second output signal if the digital multiplexed signal from the demodulator exceeds a second threshold level; and

asserting a distortion event signal when both the ~~both~~ first and second output signals are simultaneously asserted.

29. (Original) The method of claim 28, wherein the first two asserting steps include filtering the digital magnitude signal and the digital multiplexed signal with high-pass filters having cut-off frequencies at about 100 kHz.

30. (Original) The method of claim 28, further comprising generating the impulse noise distortion indication signal by smoothing the distortion event signal.

31. (Currently amended) The method of claim ~~25~~ 27, further comprising modifying the audio output signals in response to the impulse noise distortion indication signal to diminish impulse noise distortion effects in the audio output signals.

Claim 32 (Cancelled).

33. (Currently amended) A method for discriminating distortion events within digital receivers, comprising:

converting analog audio information to digital audio signal information;

demodulating the digital audio signal information;

discriminating distortions within the demodulated digital signals by monitoring the demodulated digital signals; and

generating at least one distortion indication signal a distortion event has been detected within the demodulated digital signals; and

wherein the discriminating distortion step comprises discriminating multipath distortion events and wherein the generating step comprises generating a multipath distortion indication signal; and

~~The method of claim 32,~~ wherein the discriminating step comprises monitoring a magnitude signal from the demodulator.

34. (Original) The method of claim 33, wherein the discriminating step further comprises:

filtering the digital magnitude signal from the demodulator with a first filter having a first time constant;

filtering the digital magnitude signal from the demodulator with a second filter having a second time constant, the second time constant being longer than the first time constant;

comparing the output signals from the first and second filters; and

asserting the multipath distortion indication signal if the output signals from the first and second filters differ in signal strength by more than a selected amount.

35. (Currently amended) The method of claim ~~32~~ 33, further comprising modifying the audio output signals in response to the impulse noise distortion indication signal to diminish impulse noise distortion effects in the audio output signals.

Claims 36 to 37 (Cancelled).

38. Distortion discrimination circuitry for a radio receiver, comprising:

demodulated digital audio input signals; and

at least one distortion indication signal as an output, the distortion indication output signal indicating when a distortion event has been detected in the demodulated audio input signals; and

wherein the distortion discrimination circuitry comprises impulse noise distortion discrimination circuitry and the distortion indication signal comprises an impulse noise distortion indication signal; and

~~The distortion discrimination circuitry of claim 37,~~ wherein the demodulated digital audio input signals comprise a digital magnitude signal and a digital multiplexed signal from a demodulator and the impulse noise distortion indication signal is based upon monitoring these two signals to determine the existence of an impulse noise event.

39. (Original) The distortion discrimination circuitry of claim 38, further comprising:

a first threshold detection circuit coupled to receive the digital magnitude signal from the demodulator and having an output signal that is asserted when a threshold is exceeded; and

a second threshold detection circuit coupled to receive the digital multiplexed signal from the demodulator and having an output signal that is asserted when a threshold is exceeded; and

wherein a distortion event signal is asserted when both the output signals from the first and second threshold detection circuits are simultaneously asserted.

40. (Original) The distortion discrimination circuitry of claim 39, wherein the first and second threshold detection circuits each comprise a high-pass filter and a threshold comparator.

41. (Original) The distortion discrimination circuitry of claim 39, further comprising smoothing circuitry coupled to receive the distortion event signal and to produce an impulse output signal to act as the impulse noise distortion indication signal.

42. (Currently amended) The distortion discrimination circuitry of claim ~~36~~ 38, wherein the distortion discrimination circuitry comprises multipath distortion discrimination circuitry and the distortion indication signal comprises a multipath distortion indication signal.

43. (Original) The distortion discrimination circuitry of claim 42, wherein the demodulated digital audio input signals comprise a magnitude signal from the demodulator and the multipath distortion indication signal is based upon monitoring this signal to determine the existence of an impulse noise event.

44. (Original) The distortion discrimination circuitry of claim 43, further comprising:

a first low-pass filter having a first time constant and being coupled to receive the digital magnitude signal from the demodulator;

a second low-pass filter having a second time constant and being coupled to receive the digital magnitude signal from the demodulator, the second time constant being longer than the first time constant; and

compare circuitry coupled to receive output signals from the first and second low-pass filters and having the multipath distortion indication signal as an output, the multipath distortion indication signal being asserted if the output signals from the first and second low-pass filters differ in signal strength by more than a selected amount.